What Is Claimed Is:

1. Multi-lumen catheter having an expandable balloon (9), where the balloon (9) is connected to a first lumen (3), and having a second lumen (5), where the second lumen (5) has at least one outlet (15), where the outlet (15), or the outlets (15), of the second lumen (5) are located between the balloon (9) and a distal end (13) of the catheter (1), characterized in that the catheter is used for the angiography of coronary arteries, aortocoronary bypasses and other exits of the aorta and its branches.

2. Catheter in accordance with claim 1, wherein the catheter (1) has a third lumen (7) having at least one outlet (21), and wherein the outlet (21), or the outlets (21), of the third lumen (7) are located between the outlet or outlets (15) and the distal end (13) of the catheter (1).

3. Apparatus for perfusing a contrast medium having a multi-lumen catheter (1) with an expandable balloon (9), where the balloon (9) is connected to a balloon pump (35) by means of a first lumen (3), having a second lumen (5), where the second lumen (5) has at least one outlet (15) which is connected through the second lumen to a first contrast medium pump or syringe (37), characterized in that the outlet (15), or the outlets (15), of the second lumen are located between the balloon (9) and the distal end (13) of the catheter (1).

4. Device in accordance with claim 3, wherein the catheter (1) has a third lumen (7) connecting to a second contrast medium pump or syringe (39) having at least one outlet (21), and wherein the outlet (21), or the outlets (21), of the third lumen (7) are located between the outlet or outlets (15) of the second lumen (5) and the distal end (13) of the catheter (1).

5. Catheter or apparatus in accordance with one of the preceding claims, wherein the outlet (15), or the outlets (15), of the second lumen (5) are

located in the proximity of the balloon (9), specifically at a distance of 0 mm to 60 mm from the balloon (9).

6. Catheter or apparatus in accordance with one of the preceding claims, wherein the outlet (21), or the outlets (21), of the third lumen (7) are located in the proximity of the distal end (13) of the catheter (1) specifically at a distance of 0 mm to 50 mm from the distal end of the catheter (1).

7. Catheter or apparatus in accordance with one of the claims 1, 3 or 5, wherein the outlet (15), or the outlets (15), of the second lumen (5) are located in the proximity of the distal end (13) of the catheter (1), specifically at a distance of 0 mm to 60 mm from the distal end (13) of the catheter (1).

8. Catheter or apparatus in accordance with one of the preceding claims, wherein the distance between the outlet or outlets (15) of the second lumen (5) and the outlet or outlets (21) of the third lumen (7) is approximately the length of the left ventricle (24), and is specifically 60 mm to 140 mm.

9. Catheter or apparatus in accordance with one of the preceding claims, wherein the balloon (9) can be filled with gas or fluid.

10. Catheter or apparatus in accordance with one of the preceding claims, wherein the balloon (9) is conical in its expanded state, and wherein the diameter of the balloon (9) increases with increasing distance from the distal end (13) of the catheter (1).

11. Catheter or apparatus in accordance with one of the preceding claims, wherein the catheter (1) has X-ray reflective markings (17, 19) in the area of the outlets (21) of the third lumen (7) and/or in the area of the outlets (15) of the second lumen (5).

12. Catheter or apparatus in accordance with one of the preceding claims, wherein the catheter (1) is bent at its distal end (13) – specifically in the shape of a pigtail, circle or spiral.

13. Apparatus in accordance with one of the preceding claims, wherein the balloon pump (3) can be controlled from EKG equipment.

14. Apparatus in accordance with one of the preceding claims 3 to 13, wherein the balloon pump (35) inflates the balloon (9) during particular heart phases, specifically during systole or diastole, or an independently selected phase range of the heart cycle, or continuously over several heart cycles.

15. Apparatus in accordance with one of the claims 3 to 13, wherein the balloon pump (35) empties the balloon (9) again during particular heart phases, specifically during systole or diastole, or an independently selected phase range of the heart cycle, or continuously over several heart cycles.

16. Apparatus in accordance with one of the claims 3 to 15, wherein the first contrast medium pump (37) can be controlled from EKG equipment.

17. Apparatus in accordance with one of the claims 3 to 16, wherein the first contrast medium pump (37) conveys contrast medium into the catheter (1) during particular heart phases, specifically during systole or diastole, or an independently selected phase range of the heart cycle, or continuously over several heart cycles.

18. Apparatus in accordance with one of the claims 3 to 17, wherein the second contrast medium pump (39) can be controlled from EKG equipment.

19. Apparatus in accordance with one of the claims 3 to 18, wherein the second contrast medium pump (39) conveys contrast medium into the catheter (1) during particular heart phases, specifically during systole or diastole, or an independently selected phase range of the heart cycle, or continuously over several heart cycles.

20. Apparatus in accordance with one of the claims 3 to 19, wherein the pressure in the environment of the balloon (9) and/or the outlets (15, 21) can be measured through first lumen (3), second lumen (7) and/or third lumen (7).

21. Apparatus in accordance with one of the claims 3 to 20, wherein pharmacologically effective substances, specifically for thrombolytic therapy following acute cardiac infarction, are injected through second lumen (5) and/or third lumen (7).